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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 11

Application Number: 09/919,239
Filing Date: July 31, 2001
Appellant(s): BOWEN ET AL.

Andrew J. Anderson
For Appellant

EXAMINER'S ANSWER

MAILED
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This is in response to the appeal brief filed 5/29/2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement that there are no known related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-18 stand or fall together and claims 19-23 stand or fall together, and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,683,853	Makuta et al.	11-1997

4,865,964	Newmiller	9-1989
4,945,035	Keevert, Jr. et al.	7-1990
4,933,272	McDugle et al.	6-1990

Research Disclosure 437013,"Color paper with exceptional reciprocity performance", September 2000. Section XIV.

*(10) **Grounds of Rejection***

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makuta et al (5,683,853) in view of Newmiller et al (4,865,964) and McDugle et al (4,933,272) and Keevert, Jr et al (4,945,035).

Makuta et al disclose a silver halide photographic material comprising a high chloride {100} grain emulsion. The grains are preferably at least 95 mol% chloride with 1 mol % or less silver iodide, and the rest being bromide (column 62, lines 31-67). The grains may be core/shell grains. The reference further teaches that the grains of the reference may have added to them a metal ion salt, preferably added during grain formation. This dopant may be added to the core, the shell, or to the entire grain. Included as suitable are both 6 and 4 coordination complexes, which may employ Mg, Mn, Fe, Co, Ni, Cu, Zn, Ru, Rh, Pd, Re, Os, Ir, Cd, or Pb as the metal among others. Preferred ligands include, Br, Cl, NO_3, CN, H_2O, NH_3, nitrosyl group, thionitrosyl group, and a carbonyl group. One or more dopants may be used in combination (column 67, line 57 to column 68, line 17). The reference teaches that the emulsions may comprise a mixed emulsion. The reference cites Newmiller as exemplifying a mixed grain emulsion comprising grains of different forms. Given the other teachings of the reference, the examiner is interpreting

"different forms" as encompassing halide content/distribution, grain structure, twinned or non-twinned crystals, and grains having different additives (column 63, line 1- column 64, line 30).

Newmiller et al disclose a silver halide material comprising blended emulsions. A speed-granularity advantage is achieved when the emulsions are used. The emulsion contains a first component comprising 10 to 90 % of a high aspect ratio emulsion and 90 to 10 % of a low aspect ratio emulsion (column 2, lines 15-49). Although the reference prefers that the grains of the reference are silver bromide or iodobromide grains, they are not limited thereto. The grains may be doped to modify their photographic properties such as speed, stability, and contrast. One or both of the emulsions may be doped, meaning that they are independently treated and do not require that they are doped in the same manner (column 4, lines 9-30). The examples use each emulsion in an amount of 50% of the total weight of the emulsion, which meets the limitations of the present claims 1-3. Also, the examples demonstrate that each fraction may be treated independently as they differ in the iodide content of the grains and one fraction is spectrally sensitized with "Dye I", while the other is sensitized with "Dye II".

Keevert, Jr. et al disclose an internally modified {100} high chloride emulsion (at least 85 % chloride) that has been doped by a hexacoordination complex. The complexes contain a rhenium, ruthenium, or osmium metal ion, and at least 4 or the ligands are cyano ligands as required by the present formula (I). The addition of the dopant increases the sensitivity of the emulsion (column 5, lines 9-55 and column 6, lines 32-60). The dopant is added in an amount of 1×10^{-6} to 5×10^{-4} mole per mole silver meeting the limitations of the present claims 1, 4, and 5 (column 9, lines 51-66). A preferred complex is $[Ru(CN)_6]^{-4}$ (see example 4).

McDugle et al disclose a silver chloride {100} emulsion (containing at least 85 mole percent chloride) wherein the grains have been internally doped with a complex meeting the limitations of the present formula (II). The metal ion is preferably ruthenium or osmium. The dopant is employed preferably in an amount of less than $1x10^{-4}$ mole per mole silver, preferably in an amount of $1x10^{-9}$ to $5x10^{-5}$ mole per mole silver (column 14, lines 5-24). The addition of the dopant into the grains results in a desirable increase in contrast and decrease in speed (see examples). The reference teaches that parameters such as speed, contrast, fog, pressure sensitivity, high and low reciprocity failure, and latent image keeping are all important in achieving acceptable photographic performance although the reference teaches that an increase in contrast and a reduction in speed (sensitivity) is desirable for that invention. The reference further teaches that in a large percentage of circumstances high sensitivity (speed) is desired. The reference therefore teaches that tailoring these properties to meet a specific image requirement is contemplated (column 4, line 64 to column 5, line 56). Therefore, this would imply that in these instances, one of ordinary skill in the art would have been motivated to combine an additive that provided high contrast but also decreased the speed (sensitivity) with an additive that would increase the speed to even out the sensitivity. A preferred complex is $[Os(NO)Cl_5]^{-2}$ (see example 2).

Given the teachings of Makuta et al that the {100} silver chloride emulsions of the reference may comprise a mixed emulsion comprising two emulsions each having a different form of grains as taught by Newmiller (cited by the reference), it would have been obvious to one of ordinary skill in the art to dope one emulsion in the manner of Keevert, Jr et al to obtain an increase in sensitivity and one by the method of McDugle et al to achieve a desirable increase

in contrast and decrease in speed, with reasonable expectation of achieving a photographic material having increased storage stability (see column 107).

With respect to the limitation of the present claim 1 which requires that the first fraction contain formula (I) in an amount of at least 10^{-7} mole per mole silver and *less than* 10^{-10} mole per mole silver of formula (II) and the second fraction to contain formula (II) in an amount of at least 10^{-10} mole per mole silver and formula (I) in an amount of *less than* 10^{-7} mole per mole silver. It is the examiner's interpretation that "less than" includes zero. The combination above having one of the two emulsions doped by formula (I) alone (preferred amount being 1×10^{-6} to 5×10^{-4} and the other doped by formula (II) alone (in an amount of 1×10^{-9} to 5×10^{-5}) would meet these limitations. The examples of the instant specification support the examiner's position as each fraction employs only a single dopant prior to being blended with another.

Claims 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makuta et al in view of Newmiller, McDugle et al, Keevert, Jr, and Research Disclosure 437013.

All of the references except for the RD have been discussed above. Makuta et al discloses that the material may be exposed in a digital exposure method employing a printing system and a laser or a light emitting diode in a pixel-by-pixel modes for a time of 10^{-4} sec or less, preferably 10^{-6} sec or less. The reference does not specify the preferred exposure dose (column 73, line 37 to column 74, line 25).

RD 437013 teaches that it is conventional in the art to perform a digital printing method as described by Makuta et al using an exposure dose of actinic radiation of at least 10-4 ergs/cm2, typically in the range of 10-4 to 10-3 ergs/cm2 for exposure times of up to 100 microseconds, or possibly up to 10 microseconds, or even 0.5 microseconds (section XIV).

Given the teachings of the RD that these exposure doses are conventional in the art, and that the Makuta et al reference teaches similar exposure times, it would have been obvious to one of ordinary skill in the art to prepare the material of Makuta et al in view of Newmiller, McDugle et al, and Keevert, Jr. et al using the conventional exposure dose for the exposure method and time of Makuta et al with reasonable expectation for achieving a material have increased storage stability.

(11) Response to Argument

Appellant has argued that the examiner has failed to establish a prima facie obviousness position because applicant states that there is no teaching or suggestion to employ any of the specific dopants in different levels in different grain fractions, and that by requiring that each of the two dopants be used *primarily* in separate fractions of silver halide grains in an emulsion layer the present invention realizes improved latent image keeping performance which is a surprising result.

Specifically, it is argued that the combination of Makuta and Newmiller is based solely on hindsight because Newmiller prefers silver bromide or iodobromide grains whereas Makuta teaches a high chloride emulsion. Also, Appellant has argued that the Makuta reference does not exemplify a mixed emulsion. As described above, Makuta et al does disclose a method of making a high chloride grain emulsion. However, the reference specifically cites the Newmiller reference as demonstrating the use of an emulsion having grains of "different forms", despite the fact that the reference prefers grains of a much different halide content. Makuta et al is clearly drawn to a high silver chloride emulsion (see claim 16 of the reference), thus the reference cites Newmiller solely for its teaching of a mixed emulsion, not for its preferred halide content. Given

the fact that Makuta cites this reference as demonstrating a suitable variation for its high chloride emulsion despite the fact that the reference is drawn to a silver bromide emulsion, the reference teaches that the modification of the high bromide emulsion of Newmiller is also suitable and advantageous in a high chloride emulsion such as that described by Makuta. Thus, the primary reference does provide a teaching or suggestion to one of ordinary skill in the art to prepare an emulsion containing two grain fractions of different forms, each which may be doped independently. Also, the different fractions may be independently chemically sensitized, and spectrally sensitized as well (column 4,line 9-60 and the examples [of Newmiller]). Lastly, the fact that the Makuta reference does not exemplify a mixed grain emulsion does not negate the fact that the reference clearly teaches that a mixed grain emulsion is suitable for use in its invention by its citing of Newmiller as it has been discussed above.

Appellant has next argued that the examiner's interpretation of "different forms" is improper. The applicant states that "different forms" only refers to the mixing of tabular grains of different aspect ratios. The examiner believes that her interpretation to be proper. Within the discussion of the grains of the Newmiller reference it is taught that the grains may vary in halide content (column 3, line 61- column 4, line 8), aspect ratio (column 3, lines 1-16), grain shape (column 3, lines 33-43), and size (column 3, lines 43-50). Also, by looking at the examples of Newmiller which blend a high aspect ratio grain emulsion and a low aspect ratio grain emulsion, the different fractions comprise grains that have different aspect ratios, different halide content (percentages of bromide and iodide), and spectrally sensitized with different amounts of dye, and with two different dyes which demonstrates that the two fractions may be treated independently, thus given the teaching cited above in column 4 that one, preferably both, of the emulsions may

be doped, it is the position of the examiner that this doping of the different fractions is also performed independently of the other. This is all taught in the discussion of the variations in the suitable types of grains, thus, absent evidence to the contrary, the examiner believes that all of these variations would be "different forms" of grains, and not just those having varying aspect ratios as the fractions may also differ in these ways and not just in the aspect ratio of each.

With respect to appellant's argument that there is no teaching or suggestion to dope the fractions individually with the dopants of the Keevert and McDugle references, the examiner maintains her position. The tertiary references are relied upon solely for their teachings of doping emulsions with their respective dopant, and the advantages expected when this is performed, not for a teaching of differentially doping each fraction of a mixed emulsion. Appellant has stated that the co-doping of silver halide grains in the prior art leads to a latent image keeping problem as discussed on page 7 of the specification, however, when made, the mixed grain emulsion of the references would be vastly different than the co-doped emulsions of the prior art. The emulsions and grains of the prior art that appellant is pointing to are emulsions containing a single type of grains wherein each grain of that emulsion has been doped with a combination of dopants, which different than resultant emulsion of the references (which would comprise an emulsion comprised of two fractions; one having grains that have been doped with a dopant of formula I, and one having grains that have been doped with a dopant of formula II). Additionally, the presently claimed emulsion may actually comprise two fractions having virtually the same grains, thus only one type of grains and not two distinct fractions. This can be seen by examining the end points given for the amounts of dopants, which, for each fraction, there is a hardly any difference in the end points of the amounts. For fraction I, there is at least

10^{-7} mole of the dopant of formula I and less than 10^{-10} mole of the formula II dopant, while in fraction II, there is at least 10^{-10} mole of the formula II dopant and less than 10^{-7} mole of the formula I dopant, thus there is almost an overlap of the amounts given the endpoints. As for the examiner's explanation as to why it would have been obvious to one of ordinary skill in the art to independently dope the two fractions, the Newmiller reference clearly teaches that the fractions may be independently doped to modify photographic properties such as speed, high or low intensity reciprocity characteristics, stability, and contrast, and are preferably internally modified as discussed above (column 4, lines 9-20 and examples). The Keevert (increases sensitivity) and McDugle (increase contrast) references disclose internally modifying dopants meeting the limitations of the present formula I and formula II, which result in an increase in the photographic properties mentioned by Newmiller, which would be the motivation to employ these dopants. Also as stated previously, the reference further teaches that in a large percentage of circumstances high sensitivity (speed) is desired. The reference therefore teaches that tailoring these properties to meet a specific image requirement is contemplated (column 4, line 64 to column 5, line 56). Therefore, this would imply that in these instances, one of ordinary skill in the art would have been motivated to combine an additive that provided high contrast but also decreased the speed (sensitivity) with an additive that would increase the speed to even out the sensitivity. Thus, the examiner is maintaining her position.

With respect to the rejection of the present claims 19-23, appellant argued that since this rejection also employs the above discussed combination of references, that the claimed printing method is not obvious over the prior art of record as the above discussed combination of

references is improper. Given that the examiner is not persuaded by appellant's arguments and is maintaining her rejection, she maintains the rejection of the present claims 19-23 as well.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Amanda C. Walke
June 25, 2003

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